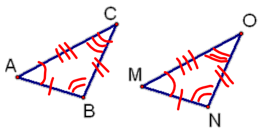
4.2 Apply Congruence and triangles

Congruent Triangles—same size and shape

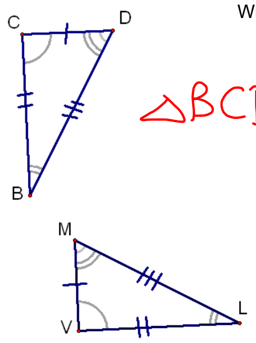
$\Delta ABC \cong \Delta MNO$

$\angle A \cong \angle M$ $\quad \overline{AB} \cong \overline{MN}$
$\angle B \cong \angle N$ $\quad \overline{BC} \cong \overline{NO}$
$\angle C \cong \angle O$ $\quad \overline{AC} \cong \overline{MO}$



The corresponding parts of congruent triangles are congruent. (CPCTC)

What triangles are congruent?



$\Delta BCD \cong \Delta LVM$

If $\Delta THE \cong \Delta SAW$, what parts are congruent?

$\angle T \cong \angle S$ $\quad \overline{TH} \cong \overline{SA}$
$\angle H \cong \angle A$ $\quad \overline{HE} \cong \overline{AW}$
$\angle E \cong \angle W$ $\quad \overline{TE} \cong \overline{SW}$

Theorem 4.3—3rd Angle Theorem—If 2 angles of 1 triangle are $\cong$ to 2 angles of another triangle, then the 3rd angles are $\cong$.

Theorem 4.4--Properties of Congruent Triangles

Reflexive $\Delta ABC \cong \Delta$ ABC

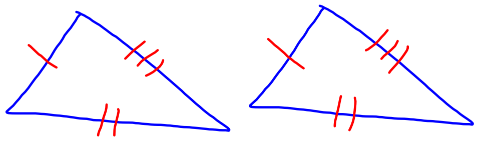
Symmetric If $\Delta ABC \cong \Delta MNO$, then $\Delta MNO \cong \Delta ABC$

Transitive If $\Delta ABC \cong \Delta MNO$ and $\Delta MNO \cong \Delta XYZ$, then

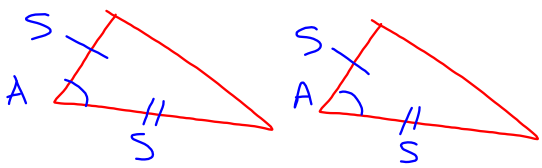
$\Delta ABC \cong \Delta XYZ$

4.3 Prove Triangles Congruent by SSS and SAS (section 4.4)

Postulate 19--Side-Side-Side(SSS)-If 3 sides of one Δ are congruent to 3 sides of another Δ, then the Δs are congruent.



Postulate 20--Side-Angle-Side(SAS)-If 2 sides and the included angle of one Δ are congruent to 2 sides and the included angle of another Δ, then the Δs are congruent.

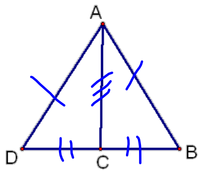


Things to keep in mind for these proofs:
Reflexive
Vertical angles are congruent
Def. of midpoint
Def. of angle bisector and segment bisector
Parallel line facts

and anything else we have learned

Given: C is the midpoint of $\overline{DB}$
$\overline{AD} \cong \overline{AB}$

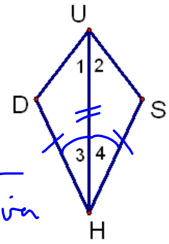
Prove: $\Delta ADC \cong \Delta ABC$



1 C is the midpt $\overline{DB}$ $\overline{AD} \cong \overline{AB}$	1 Given
2 $\overline{DC} \cong \overline{CB}$	2 def of midpt
3 $\overline{AC} \cong \overline{AC}$	3 Reflexive
4 $\Delta ADC \cong \Delta ABC$	4 SSS

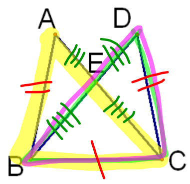
Given: $\overline{HU}$ bisects $\angle DHS$
$\overline{HD} \cong \overline{HS}$

Prove: $\Delta UDH \cong \Delta USH$



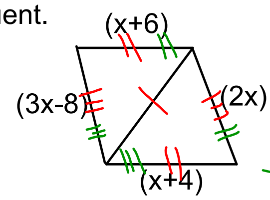
S.	R.
1 ~	1 Given
2 $\angle 3 \cong \angle 4$	2 def of $\angle$ Bis.
3 $\overline{UH} \cong \overline{UH}$	3 Reflexive
4 $\Delta UDH \cong \Delta USH$	4 SAS

Given: $\overline{AB} \cong \overline{DC}$; $AE = DE$; $EB = EC$
Prove: $\Delta ABC \cong \Delta DCB$



1 ~	1 Given
2 $\overline{BC} \cong \overline{BC}$	2 Reflexive
3 $AE + EC = DE + EB$	3 Add.
4 $AE + EC = AC$ $DE + EB = DB$	4 SAP
5 $AC = DB$	5 Subst
6 $\overline{AC} \cong \overline{DB}$	6 def of $\cong$
7 $\Delta ABC \cong \Delta DCB$	7 SSS

Find all values of x that make the triangles congruent.



$x + 6 = x + 4$
$6 \neq 4$

$2x = 3x - 8$
$8 = x$

OR

$x + 6 = 2x$
$6 = x$

$3x - 8 = x + 4$
$2x = 12$
$x = 6$

HW
p228-229
#s 3, 5-10, 16, 20
p236-238
#s 5-7, 21, 24, 26